

CLAIMS

WHAT IS CLAIMED IS:

1. A method for monitoring a file in a file security system, comprising the steps of:

- (a) providing a first file representation of a file wherein said file is disposed at a first location;
- (b) first processing said first file representation to provide first signals in accordance with said first file representation;
- (c) storing said first signals in a central repository disposed at a second location wherein said second location is remote from said first location;
- (d) providing a second file representation of said file wherein said file is disposed at a third location remote from said second location;
- (e) second processing said second file representation to provide second signals in accordance with said second file representation;
- (f) accessing said first signals from said central repository and comparing said first signals with said second signals; and
- (g) determining a status of said file in accordance with said comparing.

2. The method for monitoring a file in a file security system of Claim 1, wherein said first location is substantially the same as said third location.

3. The method for monitoring a file in a file security system of Claim 1, wherein said first and second processing steps comprise the further step of applying a hash function to said first and second file representations.

4. The method for monitoring a file in a file security system of Claim 3, comprising the further step of providing corresponding first and second mathematical signatures of said first and second file representations in accordance with said hash functions.

5. The method for monitoring a file in a file security system of Claim 4, comprising the further step of comparing said first and second mathematical signatures.

6. The method for monitoring a file in a file security system of Claim 1, comprising the further step of comparing substantially the entireties of said first and second file representations.

7. The method for monitoring a file in a file security system of Claim 1, comprising the further step of excluding a selected portion of said first and second file representations from said comparing.

8. The method for monitoring a file in a file security system of Claim 1, wherein said file comprises a database.

9. The method for monitoring a file in a file security system of Claim 1, wherein said file comprises a combination of files.

5 10. The method for monitoring a file in a file security system of Claim 1, wherein said file comprises the output of a program.

11. The method for monitoring a file in a file security system of Claim 1, wherein steps (d)-(g) are repeated periodically.

10 12. The method for monitoring a file in a file security system of Claim 1, wherein steps (d)-(g) are repeated continuously.

13. The method for monitoring a file in a file security system of Claim 1, wherein steps d-g. are performed in response to a predetermined system event.

14. The method for monitoring a file in a file security system of Claim 1, wherein steps (d)-(g) are manually initiated.

15 15. The method for monitoring a file in a file security system of Claim 1, comprising the further step of providing an alert in response to said determining of said status of said file.

16. The method for monitoring a file in a file security system of Claim 1, comprising the further step of restoring said file in response to said determining of said status of said file.

20 17. The method for monitoring a file in a file security system of Claim 1, wherein said file is disposed in a web site comprising the further step of traversing said web site using a spider.

25 18. The method for monitoring a file in a file security system of Claim 17, wherein said web site includes a plurality of web site addresses and said file is provided with a corresponding file physical address comprising the further step of matching a web site address of said plurality of web site addresses with said file physical address.

19. A method for monitoring a file in a file security system, comprising the steps of:

- (a) providing a plurality of files disposed at a plurality of differing locations, each file of said plurality of files having a respective location indicator for indicating the location of said plurality of locations where said file is disposed and a respective first file representation;
- (b) first processing each first file representation to provide a corresponding plurality of first signals in accordance with said first file representations;

- (c) storing said plurality of first signals and said respective location indicators in a central repository disposed in a location remote from said differing locations;
- (d) providing a second file representation of a selected file of said plurality of files, said selected file having a selected location indicator;
- (e) second processing said second file representation to provide second signals in accordance with said second file representation;
- (f) accessing selected first signals of said plurality of first signals from said central repository in accordance with said selected location indicator; and
- (g) comparing said selected first signals with said second signals.

10 20. A method for monitoring a file in a file security system of Claim 19, comprising the further step of determining a status of said selected file in accordance with said comparing.

15 21. The method for monitoring a file in a file security system of Claim 19, wherein said first and second processing comprise the further step of applying a hash function to said first and second file representations.

22. The method for monitoring a file in a file security system of Claim 21, comprising the further step of providing corresponding first and second mathematical signatures of said first and second file representations in accordance with said hash function.

20 23. The method for monitoring a file in a file security system of Claim 22, comprising the further step of comparing said first and second mathematical signatures.

24. The method for monitoring a file in a file security system of Claim 19, comprising the further step of comparing substantially the entireties of said first and second file representations.

25 25. The method for monitoring a file in a file security system of Claim 19, comprising the further step of excluding a selected portion of said first and second file representations from said comparing.

26. The method for monitoring a file in a file security system of Claim 19, wherein a file of said plurality of files comprises a database.

30 27. The method for monitoring a file in a file security system of Claim 19, wherein a file of said plurality of files comprises a combination of files.

28. The method for monitoring a file in a file security system of Claim 19, wherein a file of said plurality of files comprises the output of a program.

29. The method for monitoring a file in a file security system of Claim 19, wherein steps (d)-(g) are repeated periodically.

30. The method for monitoring a file in a file security system of Claim 19, wherein steps (d)-(g) are repeated continuously.

5 31. The method for monitoring a file in a file security system of Claim 19, wherein steps (d)-(g) are performed in response to a predetermined system event.

32. The method for monitoring a file in a file security system of Claim 19, wherein step d. is manually initiated.

10 33. The method for monitoring a file in a file security system of Claim 20, comprising the further step of providing an alert in response to said determining of said status of said selected file.

34. The method for monitoring a file in a file security system of Claim 20, comprising the further step of restoring said selected file in response to said determining of said status of said selected file.

15 35. The method for monitoring a file in a file security system of Claim 19, comprising the further step of determining a first location indicator associated with a first file representation.

36. The method for monitoring a file in a file security system of Claim 35, comprising the further step of accessing said selected first signals in accordance with said first location indicator.

20 37. The method for monitoring a file in a file security system of Claim 19, wherein said file is disposed in a web site comprising the further step of traversing said web site using a spider.

25 38. The method for monitoring a file in a file security system of Claim 37, wherein said web site includes a plurality of web site addresses and said file is provided with a corresponding file physical address comprising the further step of matching a web site address of said plurality of web site addresses with said file physical address.

39. A method for monitoring a file in a file security system, comprising the steps of:

- (a) providing a file to be monitored;
- (b) applying a plurality of hash functions to said file to provide a corresponding plurality of file signatures;
- (c) applying a time varying stamp to at least one of said file signatures of said plurality of file signatures to provide a time stamped file signature;
- (d) combining said file signatures of said plurality of signatures including said

time stamped file signature in order to provide a combined file signature;

- (e) applying a hash function to said combined file signature to provide a hashed file signature; and
- (f) comparing said hashed file signature with a further file signature.

5 40. The method for monitoring a web page in a web security system of Claim 39, wherein said plurality of hash functions comprises the SHAH-1, MD2 and MD5 hash functions.

41. The method for monitoring a file in a file security system of Claim 39, comprising the further step interspersing said file signatures of said plurality of file signatures with random characters to form a plurality of file signatures having a predetermined length.

10 42. The method for monitoring a file in a file security system of Claim 39, comprising the further step of changing said time varying stamp daily.

43. The method for monitoring a file in a file security system of Claim 42, comprising the further step of storing a plurality of said time varying stamps for use in subsequent comparisons of said file signature with differing file signatures.

15 44. The method for monitoring a file in a file security system of Claim 41, comprising the further step of interspersing said combined file signature with random characters to provide a plurality of combined file signature having a predetermined length.

20 45. The method for monitoring a file in a file security system of Claim 44, wherein said plurality of hash functions is applied to a first file representation of said file comprising the further steps of:

- (a) providing a second file representation of said file;
- (b) applying said plurality of hash functions to said second file representation to provide a corresponding plurality of further file signatures;
- (c) combining said further file signatures of said plurality of further file signatures to provide a further combined file signature;
- (d) applying a hash function to said further combined file signature to provide a further hashed file signature;
- (e) comparing said hashed file signature with said further file signature; and
- (f) determining a status of said file in accordance with said comparing; and
- (g) applying a hash function to said further combined file signatures to provide a further hashed signature.

46. The method for monitoring a file in a file security system of Claim 45, wherein said hashed signature is stored in a central repository disposed at a location remote from said file.

5 47. The method for monitoring a file in a file security system of Claim 39, wherein said hashed signature and said further signature are representative of substantially the entirety of said file.

10 48. The method for monitoring a file in a file security system of Claim 39, wherein said hashed signature and said further signature are representative of a selected portion of said file.

49. The method for monitoring a file in a file security system of Claim 39, wherein said file comprises a database.

50. The method for monitoring a file in a file security system of Claim 39, wherein said file comprises a combination of files.

15 51. The method for monitoring a file in a file security system of Claim 48, wherein said file comprises the output of a program.

52. The method for monitoring a file in a file security system of Claim 45, wherein said second file representation is determined periodically.

53. The method for monitoring a file in a file security system of Claim 39, comprising the further step of providing an alert in response to said comparing.

20 54. The method for monitoring a file in a file security system of Claim 39, comprising the further step of restoring said file in response to said comparing.

55. The method for monitoring a file in a file security system of Claim 39, wherein said file is disposed in a web site comprising the further step of traversing said web site using a spider.

25 56. The method for monitoring a file in a file security system of Claim 55, wherein said web site includes a plurality of web site addresses and said file is provided with a corresponding file physical address comprising the further step of matching a web site address of said plurality of web site addresses with said file physical address.

30 57. The method for monitoring a file in a file security system of Claim 39, comprising the further step of applying a digital signature to at least one of said file signatures.

58. The method for monitoring a file in a file security system of Claim 39, comprising the further step of applying a certificate assigned by said file security system to at least one of said file signatures of said plurality of file signatures.

59. The method for monitoring a file in a file security system of Claim 39, comprising the further step of applying a pass phrase to at least one of said file signatures of said plurality of file signatures.

5 60. The method for monitoring a file in a file security system of Claim 39, comprising the further step of applying a time indicating stamp to at least one of said file signatures of said plurality of file signatures.

10 61. A method for monitoring a file in a file security system, comprising the steps of:

- (a) providing a first file representation of a file wherein said file is disposed at a first location;
- (b) first processing said first file representation to provide first signals in accordance with said first file representation;
- (c) storing said first signals in a central repository disposed at a second location wherein said second location is remote from said first location;
- (d) notifying said second location of a change in said file;
- (e) altering said first signals in accordance with said notifying to provide altered first signals;
- (f) accessing said altered first signals from said central repository; and
- (g) determining a status of said file in accordance with said altered first signals.

15 62. The method for monitoring a file in a file security system if Claim 61, comprising the further steps of:

- (a) providing a second file representation of said file;
- (b) second processing said second file representation to provide second signals in accordance with said second file representation;
- (c) comparing said altered first signals with said second signals; and
- (d) determining said status of said file in accordance with said comparing.

20 63. The method for monitoring a file in a file security system of Claim 62, comprising the further steps of:

- (a) applying a hash function to said first and second file representations;
- (b) providing corresponding first and second mathematical signatures of said first and second file representations in accordance with said hash function; and
- (c) comparing said first and second mathematical signatures.

25 64. The method for monitoring a file in a file security system of Claim 62, comprising

the further step of excluding a selected portion of said first and second file representations from said comparing.

65. The method for monitoring a file in a file security system of Claim 61, wherein said file comprises a database.

5 66. The method for monitoring a file in a file security system of Claim 61, wherein said file comprises a combination of files.

67. The method for monitoring a file in a file security system of Claim 61, wherein said file comprises the output of a program.

10 68. The method for monitoring a file in a file security system of Claim 62, wherein the step of providing a second file representation of said file is repeated periodically.

69. The method for monitoring a file in a file security system of Claim 62, wherein the step of providing a second file representation of said file is repeated continuously.

15 70. The method for monitoring a file in a file security system of Claim 62, wherein the step of providing a second file representation of said file is performed in response to a predetermined system event.

71. The method for monitoring a file in a file security system of Claim 62, wherein the step of providing a second file representation of said file is manually initiated.

72. The method for monitoring a file in a file security system of Claim 61, comprising the further step of providing an alert in response to said determining of said status of said file.

20 73. The method for monitoring a file in a file security system of Claim 61, comprising the further step of restoring said file in response to said determining of said status of said file.

74. The method for monitoring a file in a file security system of Claim 61, wherein said file is disposed in a web site comprising the further step of traversing said web site using a spider.

25 75. The method for monitoring a file in a file security system of Claim 61, wherein said web site includes a plurality of web site addresses and said file is provided with a corresponding file physical address comprising the further step of matching a web site address of said plurality of web site addresses with said file physical address.

30 76. The method for monitoring a file in a file security system of Claim 61, comprising the further step of notifying using HTTP.

77. The method for monitoring a file in a file security system of Claim 71, comprising the further step of notifying using XML transactions.

78. The method for monitoring a file in a file security system of Claim 76, comprising the further step of notifying using HTTPS.

79. The method for monitoring a file in a file security system of Claim 76, comprising the further step of notifying using SMTP.

5 80. The method for monitoring a file in a file security system of Claim 76, comprising the further step of notifying using a transaction website.

81. The method for monitoring a file in a file security system of Claim 61, wherein said notifying occurs prior to said change.

10 82. The method for monitoring a file in a file security system of Claim 61, wherein said notifying occurs after said change.

83. The method for monitoring a file in a file security system of Claim 61, wherein said notifying occurs simultaneously with said change.

84. The method for monitoring a file in a file security system of Claim 61, wherein said change occurs on a scheduled basis.

15 85. The method for monitoring a file in a file security system of Claim 61, comprising the further step of notifying using a pre-agreed protocol over a pre-agreed transport.